

## EENS Job Risk Assessment

<b>Name(s) of Risk Team Members:</b> B. Dong, J. Johnson, S. Springsten, J. Nagy, L. Bowerman, B. Bowerman, W. Litzlce, D Mahajan, P. Carr, A. Piper, J. Boccio	<b>Point Value → Parameter ↓</b>	1	2	3	4	5
	<b>Frequency (B)</b>	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
<b>Job Title: Compressed Gas Work</b>  <b>Job Number or Job Identifier: EENS-JRA-001</b>  <b>JRA Date:</b>	<b>Severity (C)</b>	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
<b>Job Description:</b> Work with compressed gas cylinders and systems, including flammable gases, and fuel-gas soldering and welding systems.	<b>Likelihood (D)</b>	Extremely Unlikely	Unlikely	Possible	Probable	Multiple
<b>Training and Procedure List (Optional)</b> Compressed Gas Subject Area						
<b>Approved by:</b> <b>Date:</b> March 18, 2005 <b>Rev. #:</b> Draft						
<b>Stressors (if applicable, please list all):</b> Weather conditions, adversely effecting storage facility conditions		<b>Reason for Revision (if applicable):</b>			<b>Comments:</b>	

				Before Additional Controls						After Additional Controls						
Job Step / Task	Hazard	Control(s)	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction
Storage of gas cylinders at bulk storage areas and loading docks	Being struck by object due to pressure release	Cylinder certification, storage area conditions, good housekeeping practices, OSHA compliance, cylinders capped and secured, tier 1	Y	1	3	4	2	24								

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	Exposure to highly toxic gases	Vented cabinets used for highly toxic gases, RMS, proper storage, training, vented rooms, area monitoring, posting, tier 1	Y	1	3	5	2	30								
	Explosion or fire due to ignition of gas	Storage area conditions, cylinder certification, good housekeeping practices equipment inspection, separation of fuel and oxidizer cylinders, OSHA compliance, cylinders capped and secured, postings, training	Y	1	3	4	2	24								
	ODH	Posting, tier 1, training, ODH Review	Y	1	3	5	2	30								
Transporting cylinders from storage to use area and locating to work bench	Overexertion injuries caused by excessive lifting, pushing, pulling, holding, carrying	Wheeled gas carts, training, cylinders secured	Y	1	2	3	3	18	Replacement of sub-standard carts							
	Being struck by object due to pressure release from failure of equipment	Cylinder design/certification, equipment inspection, training, cylinders capped and secured	N	1	2	4	1	8	Replacement of sub-standard carts							
Moving cylinders to different floor level in elevators	Being struck by object due to pressure release from failing of cylinder or inhalation exposure	Wheeled gas carts with cylinders secured; cylinders capped and secured; no personnel in elevator compartment during floor changes, training	N	1	2	3	1	6	Replacement of sub-standard carts							

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Removing Cap	Valve failure due to improper cap removal	Training, proper tool for job (strap wrench), removal of cylinder from service	N	1	2	4	1	8	Verify availability of strap-wrench							
Attaching regulator to cylinder	Being struck by object due to pressure release; gas release	Regulator design/certification, equipment inspection, safety glasses, training, cylinders secured	N	1	3	4	1	12								
	Stuck valve due to improper opening, causing failure or release	Use of proper tool to open valve, training	N	1	1	4	1	4								
Connecting regulated cylinder to system	Being struck by object due to pressure release, break valve	Cylinder/regulator design/certification, equipment inspection, training, system design/review, isolation valves, OSHA compliance, cylinders secured, safety glasses	N	1	2	4	1	8								
	Explosion due to improper regulator (e.g., oiled regulator on oxygen cylinder)	Use of properly rated regulator, no use of adapters, training, Tier 1	N	1	2	4	1	8								
Storing gas cylinders in use areas	Being struck by object due to pressure release; gas release	Cylinder certification, OSHA compliance, cylinders capped and secured; secured, Tier 1, vent monitor	Y	1	3	4	1	12								

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Use of compressed gases	Being struck by object due to pressure release	Equipment inspection, training, system design/review, safety glasses, OSHA compliance, cylinders secured	N	1	5	3	1	15								
	Contaminated or mislabeled cylinder	User check for signs of cylinder content error; QA specifications as appropriate	N	1	3	4	1	12								
	Oxygen deficiency	System design/review, ventilation, ODH review, Tier 1, training, monitoring as appropriate, posting	N	1	3	5	1	15								
	Poisoning or lung damage due to inhalation of toxic gas	System design/review, MSDS, ventilation, Tier 1, monitoring, posting	N	1	3	5	1	15								
	Explosion of glass vessels used under pressure in experimental set-ups	Training, proper use of regulators, system design review, safety glasses, secondary containment (>2 cc vol or 1/16" diam.), barriers	N	1	2	4	1	8								
Use of flammable or oxidizing gas	Explosion or fire due to ignition of gas; failure of flexible lines	System design/review, posting, MSDS, ventilation, Tier 1, OSHA compliance, cylinders secured, removal of heat or spark sources	N	1	2	4	1	8								
	Contaminated or mislabeled cylinder causing fire or explosion	User check for signs of cylinder content error; QA specifications as appropriate	N	1	3	4	1	12								

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	Explosion or fire due to reaction of gas with surroundings	System design/review, MSDS, ventilation, Tier 1, OSHA compliance, segregation of materials	N	1	2	4	1	8								
Use of fuel-gas system for soldering, welding or other operation	Explosion due to improper gas mixture	Training, burning permits, OSHA compliance, MSDS, proper nozzles and ignition devices, ventilation	N	1	2	4	1	8								
	Explosion or fire due to leaking hoses, nozzles or valves	Equipment inspections, Tier 1, training, OSHA compliance; segregation when not in use, burning permits	N	1	2	4	1	8								
	Fire due to ignition of surrounding materials or clothing	Area inspections and preparation, Tier 1, training, burning permits, fire watch	N	1	2	3	2	12								
	Contact with heated objects resulting in burns	Work area conditions, Tier 1, burning permits, training, gloves, proper tools or tongs	N	1	2	1	3	6								
	Personnel injury from welding	Welding helmet or other body & proper eye protection, training, OSHA compliance, burning permits as req'd.	N	1	1	4	2	8								

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Disconnecting gas supply from system	Being struck by object due to pressure release, exposure	Condition of regulator, equipment inspection, training, system design/review, isolation valves, safety glasses, OSHA compliance, cylinders secured, change fittings	N	1	2	4	1	8								
Removing regulator from cylinder	Being struck by object due to pressure release	Cylinder/regulator design/certification, equipment inspection, training, system design/review, safety glasses, OSHA compliance, cylinders secured	N	1	2	3	1	6								
Transporting spent cylinder to storage area	Overexertion injuries caused by excessive lifting, pushing, pulling, holding, carrying or throwing of an object	Wheeled gas carts, training, cylinders capped and secured	N	1	2	3	3	18	Replacement of sub-standard carts							
Further Description of Controls Added to Reduce Risk:																
*Risk:	0 to 20 Negligible	21 to 40 Acceptable	41 to 60 Moderate					61 to 80 Substantial			81 or greater Intolerable					